

CSCI-4965/6963: Robot Motion Planning
Lecture 7: September 20, 2001
Exact Cell Decomposition

Today's Class

Today we look at exact cell decomposition methods for motion planning. In particular, we consider the *trapezoidal decomposition* method, an exact cell decomposition method to plan the motion of a translating robot in the plane.

1. Cell decomposition methods
2. Trapezoidal decomposition, computing using line sweep
3. Path smoothing

Reading

Chapter 5.1 and Appendix D, Latombe.

Additional References

Chapter 13 of *Computational Geometry: Algorithms and Applications*, second edition, by M. de Berg, M. van Kreveld, M. Overmars, and O. Schwarzkopf, Springer, 2000.

Chapter 33 of *Introduction to Algorithms*, second edition, by Cormen, Leiserson, Rivest, and Stein, McGraw Hill/MIT Press, 2001. (Or Chapter 35 of the first edition.)

Next Class

Approximate cell decomposition.